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SPORT EFFORT FOR AND HARVEST OF
CHINOOK SALMON IN THE CHIGNIK RIVER,
ALASKA, DURING 1989¹

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ABSTRACT

A creel survey was conducted from 2 July through 9 August 1989 to estimate the sport effort, catch, and harvest of chinook salmon *Oncorhynchus tshawytscha* in the Chignik River, Alaska. Data from these surveys indicated that sport anglers fished an estimated 689 angler-hours and harvested an estimated 181 chinook salmon. Fifteen of the 181 chinook salmon harvested were small kings, or kings under 710 millimeters (28 inches). An additional 41 chinook salmon were estimated to have been caught and released. Seven of the 41 released salmon were small. Age 1.4 chinook salmon were most abundant in the harvest. The estimated harvest of 181 chinook salmon represents an estimated 4.7 percent exploitation of the inriver escapement and estimated 2.4 percent exploitation of the total chinook salmon return to the Chignik River. Angler characteristic data collected in conjunction with the creel survey indicate that the majority of sport anglers fishing the Chignik River were unguided adult residents of the state. These data also indicate that 46 percent of anglers fishing the river were successful in catching at least one chinook salmon and that a majority of these successful anglers (92 percent) retained at least one chinook salmon. Of the anglers interviewed, 98 percent used spinners. The remaining 2 percent used flies.

KEY WORDS: chinook salmon, *Oncorhynchus tshawytscha*, effort, harvest, size, release, age, Chignik River, Alaska Peninsula.

INTRODUCTION

The Chignik River is remotely located on the Alaska Peninsula near Chignik, Alaska (Figure 1). The river supports annual returns of all five species of Pacific salmon *Oncorhynchus* spp. These returns currently support commercial, sport, subsistence, and personal use fisheries.

Within the past several years, concern has been expressed regarding the status of the river's returns of chinook salmon *O. tshawytscha*. These stocks are harvested by a major commercial fishery directed at sockeye salmon *O. nerka* as well as by sport, personal use, and subsistence fisheries. Given the concern for the river's chinook salmon stocks, a preliminary escapement goal of 1,100 chinook salmon (longer than 710 mm) was set by the Alaska Department of Fish and Game in 1988.

Escapements of chinook salmon are monitored annually through a weir on the Chignik River commencing in late May through early August. The weir is located midway between Chignik Lagoon and Chignik Lake. Weir counts of chinook salmon do not include fish less than approximately 650 mm. Chinook salmon less than approximately 650 mm are counted as sockeye salmon due to the similarity in length. Actual weir counts were expanded to account for fish under 650 mm. Expanded escapements of chinook salmon from 1980 through 1989 have averaged 3,710 fish (Table 1). Commercial harvest of chinook salmon during this period has averaged 3,851. Subsistence chinook harvest has been documented since 1976 and has averaged 28 fish. Personal use, commercial fishermen retaining a portion of their catch for their own use, has not been documented but has been estimated by commercial fisheries managers at about 100 chinook per year.

Sport fishing effort and harvest is variable and often based on the amount of commercial fishing time, as many of the sport fishermen are also associated with the commercial fishing industry. Programs designed to accurately estimate the harvest of chinook salmon have only been implemented during 1988 and 1989. Harvest during these years was 233 and 181 chinook, respectively. Although data on minor components of the run are missing during some years (personal use and sport harvest), the return has averaged 7,620 over the last 10 years (1980-1989). Of the various fisheries harvesting these stocks, the commercial fishery is the primary user.

The sport fishery for chinook salmon primarily occurs in the reach between the weir and the outlet of Chignik Lake. This is an area where the fish hold until becoming sexually mature. After reaching maturity, the fish apparently disperse and spawn both above and below the weir. Although the sport fishery harvests comprise a small portion of the return (2% in both 1988 and 1989), there was a perception that sport harvests have increased in recent years. Since precise harvest estimates of the sport fishery were unavailable, there was a concern that in years of weak returns adequate escapements would not be achieved. The Board of Fisheries addressed such concerns in March 1988 by reducing the sport bag limit from five to three chinook salmon of which only two may be greater than 710 mm in length (28 inches).

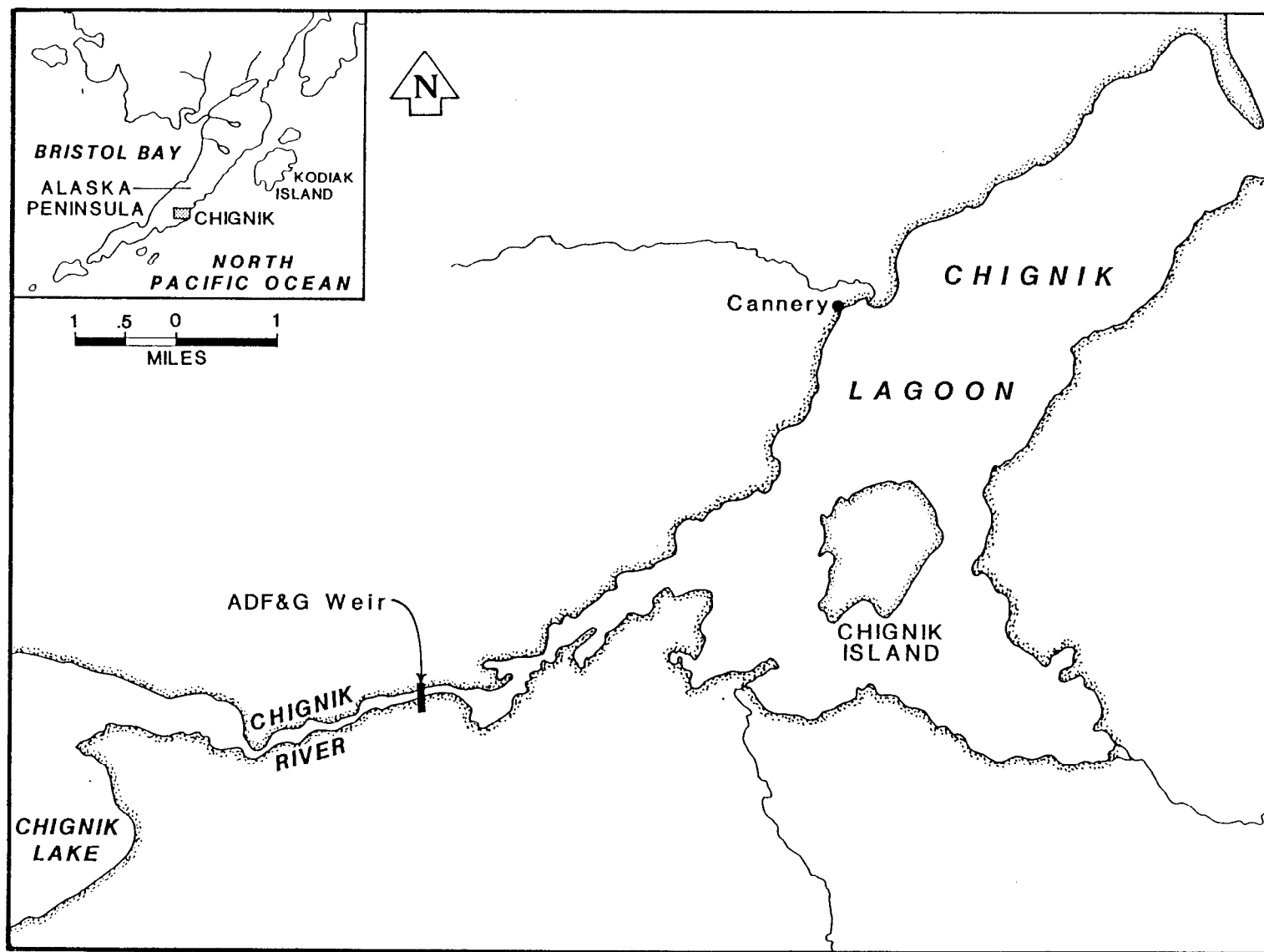


Figure 1. Location of Chignik River, Alaska Peninsula, Alaska.

Table 1. Return statistics for chinook salmon to the Chignik River, 1963-1989.

Year	Commercial Harvest	Subsistence Harvest ^a	Escapement ^b	Expanded Escapement ^c	Sport Harvest	Return Estimate ^d
1963	1,744		564	709		3,017
1964	1,099		914	1,150		2,249
1965	1,592		942	1,185		2,777
1966	636		822	1,034		1,670
1967	882		1,500	1,887		2,769
1968	674		1,000	1,258		1,932
1969	3,448		600	755		4,203
1970	1,225		2,500	3,145		4,370
1971	2,010		2,000	2,516		4,526
1972	464		1,500	1,953		2,417
1973	525		822	1,034		1,559
1974	255		672	845		1,100
1975	549	No data	877	1,103		1,652
1976	763	100	700	881		1,744
1977	711	50	798	1,004		1,765
1978	1,603	50	1,197	1,506		3,159
1979	1,266	14	1,050	1,321		2,601
1980	2,325	9	876	1,382		3,716
1981	2,694	100	1,603	2,016		4,810
1982	5,236	2	2,412	3,034		8,272
1983	5,488	0	1,943	2,444		7,932
1984	4,318	26	5,806	7,303		11,647
1985	1,919	1	3,144	3,738		5,658
1986	3,037	6	3,612	3,857		6,900
1987	2,651	10	2,624	3,346	No data	6,007
1988	7,296	3	4,868	6,091	233	13,623
1989	3,542	20	3,316	3,888	181	7,631
10 year average	3,851	18	3,020	3,710	--	7,620

^a Subsistence harvests are estimated by expanding results of returned permits to total number of permits issued.

^b No estimate made for chinook salmon escapement after removal of the weir.

^c Weir counts of chinook salmon do not include fish less than approximately 650 mm. Chinook salmon less than approximately 650 mm are counted as sockeye salmon due to the similarity in length. The number of chinook salmon smaller than 650 mm for 1986 and 1987 were estimated from length frequency data. The values for the other years were determined from relationship of marine age and length presented by Barrett (1988) where essentially all chinook salmon smaller than 650 mm in the Chignik River system are marine age -.2 or younger.

^d Return estimates include the commercial, subsistence, and sport harvests together with the expanded escapement estimates. Estimates of returns do not include chinook salmon kept by commercial fishermen, which has been roughly estimated near 100 fish per year.

Given these concerns, a creel survey was initiated on the Chignik River to estimate the sport effort, harvest, and release of chinook salmon as well as the age, sex, and length characteristics of the harvest.

METHODS

Creel Survey

The chinook salmon immigration to the Chignik River during 1989 commenced during late June and continued through early August. The sport fishery primarily occurred in a 2.7 km section of the river (above the weir) where chinook salmon hold prior to spawning. Access was by boat from Chignik Lagoon or Chignik Lake with most fishing having occurred from boats. The sport fishing season for chinook salmon was open all year in 1989 and anglers were permitted a daily bag limit of three chinook salmon of which only two fish could be longer than 710 mm. Sport fishing was not permitted within 100 m of the weir, by regulation.

Study Design:

A roving creel survey was conducted on the Chignik River from 2 July through 9 August 1989 to estimate sport effort (in angler-hours), harvest, and release of chinook salmon. The creel survey followed a stratified random sampling design. Angler counts were used to determine effort and angler interviews were used to determine catch and harvest rates.

Angler effort, catch, and harvest rates were estimated irrespective of weekends and holidays. The fishing day was considered to be 17 hours (0600-2300 hours) and was stratified into three time periods: A) 0600-1159 hours; B) 1200-1659 hours; and C) 1700-2300 hours. Days to be sampled in each period were randomly selected without replacement from those available. Sampling effort was allocated approximately equally across time periods. Sampling occurred during a randomly selected 2.5-hour sampling period in each selected sampling unit.

The major assumptions necessary for the creel survey are:

1. Angler counts made during the same day and on consecutive days are independent.
2. No significant fishing effort occurs during the hours 2300-0600.
3. Interviewed anglers are representative of the total angler population.
4. The number of anglers interviewed during a day is proportional to the effort on that day.
5. Fishing effort does not influence catch per unit effort.
6. Angler efforts and catches are normally distributed random variables.

Data Collection:

During a selected sample period, a starting time was randomly selected within the randomly selected 2.5-hour survey period to count the number of anglers. Angler counts were conducted by boating the length of the fishing area as quickly as possible and counting the number of people actively engaged in fishing. Approximately 30 minutes were required to conduct an angler count. All counts were considered instantaneous (Neuhold and Lu 1957).

The remaining time in the 2.5-hour survey period was spent conducting angler interviews. Only anglers who had completed fishing were interviewed. The following information was recorded during each interview:

1. number of fish released by species,
2. number of fish retained by species,
3. total hours fished (to the nearest 1/4 hour); and
4. selected information regarding angler characteristics and demographics.

Data Analyses:

Angler effort was calculated using a stratified random sample design (Scheaffer et al. 1979). Effort and its variance were estimated over all periods as:

$$\hat{E} = \sum_{k=1}^P N_k \bar{Y}_k, \quad [1]$$

and

$$V(\hat{E}) = \sum_{k=1}^P [N_k^2 (s_k^2 / m_k)], \quad [2]$$

where;

$$s_k^2 = \left[\sum_{i=1}^W \sum_{j=1}^{d_i} (y_{ijk} - \bar{Y}_k)^2 \right] / (m_k - 1). \quad [3]$$

Notations used in the above equations and subsequent equations for the roving creel survey are described in Tables 2 and 3.

Rates of catch of chinook salmon (fish caught per angler-hour) were estimated using a two-stage random sample design with a finite number of primary sample units (days) and an unknown number of secondary sample units (anglers). Only completed-trip interviews were used to estimate harvest rates. Catch rates were estimated as:

Table 2. Definitions for the notation used in the equations for calculating angler effort in the roving creel survey.

Notation	Definition
<u>Angler Effort Equations</u>	
\hat{E}	the estimate of effort in angler-hours.
N_k	the total number of hours of possible fishing time during period k .
\bar{Y}_k	the mean angler count for period k .
P	the number of daily periods.
m_k	the number of angler counts conducted during period k .
W	the number of weeks in the fishing period.
d_i	the number of days randomly selected for conducting an angler count during a specific weekly component i .
\bar{Y}_k	the mean angler count for period k over all weeks.
y_{ijk}	an angler count made during week i , day j , and period k .

Table 3. Definitions for the notation used in the equations for calculating rates of catch and harvest and subsequent catch and harvest in the roving creel survey.

Notation	Definition
\hat{C}	the estimate of catch ^a during a specific weekly component.
\bar{c}	the mean catch ^a per angler by all anglers interviewed during a specific weekly component.
\bar{c}_i	the mean catch ^a per angler by all anglers interviewed on day i during a specific weekly component.
c_{ik}	the catch ^a by angler k interviewed on day i during a specific weekly component.
D	the number of days the fishery was open during a specific weekly component.
d	the number of days on which angler interviews were conducted during a specific weekly component.
\bar{f}	the mean number of hours fished by all anglers interviewed during a specific weekly component.
f_{ik}	the number of hours spent fishing by angler k interviewed on day i during a specific weekly component.
m_i	the number of anglers interviewed on day i during a specific weekly component.
r	the correlation between the c_{ik} and f_{ik} for anglers interviewed during a specific weekly component.
s_i	the sample variance for the mean catch by anglers interviewed on day i of a specific weekly component (c_i).

^a Catch or harvest

$$\hat{CPUE} = \bar{c}/\bar{f} = \left[\sum_{i=1}^D \sum_{k=1}^{m_i} c_{ik} \right] / \left[\sum_{i=1}^D \sum_{k=1}^{m_i} f_{ik} \right]. \quad [4]$$

The variance of CPUE was approximated using the formula for the quotient of the mean of two random variables (Jessen 1978), which is:

$$V(\hat{CPUE}) \approx [\hat{c}/\bar{f}]^2 \left[\frac{s_c^2}{\bar{c}} + \frac{s_f^2}{\bar{f}} - (2rs_{cf}/\bar{cf}) \right]. \quad [5]$$

The two-stage variance estimate for \bar{c} was (Sukhatme et al. 1984, Von Geldern and Tomlinson 1973):

$$s_c^2 = [1 - (d/D)] s_B^2/d + \left[\sum_{i=1}^D (s_i^2/m_i) \right] / (dD), \quad [6]$$

where;

$$s_B^2 = \left[\sum_{i=1}^D (\bar{c}_i - \bar{c})^2 \right] / (d-1). \quad [7]$$

The variance for \bar{f} was estimated identically as for \bar{c} by substituting the necessary quantities for effort into equations 7 and 8.

Total catch was estimated as:

$$\hat{C} = \hat{E} \hat{CPUE}. \quad [8]$$

The variance of this estimate was calculated using the formula for the product of two independent random variables (Goodman 1960):

$$V(\hat{C}) = [\hat{E}^2 V(\hat{CPUE})] + [\hat{CPUE}^2 V(\hat{E})] - [V(\hat{E}) V(\hat{CPUE})]. \quad [9]$$

Mean harvest rates and associated variances were estimated following the above procedures with the exception that only fish harvested by interviewed anglers were used.

Biological Data

A portion of the chinook salmon harvested by the sport fishery was randomly sampled for age, sex, and length information. Three scales were collected on the left side of each fish approximately two rows above the lateral line and on the diagonal row downward from the posterior insertion of the dorsal fin as described in Clutter and Whitesel (1956). Scales were mounted on adhesive-coated cards and impressions were made in cellulose acetate. Age determinations were made by examination of scales using a microfiche reader. Ages were

designated using the European method (Koo 1962) where the first number refers to the number of years of freshwater residence after emergence and the second number refers to the number of years of marine residence. Fish lengths were measured from the middle of the eye to fork of the tail to the nearest 0.5 cm.

The proportional age composition of the sampled portion of the sport harvest was estimated for each fishery. Letting p_h equal the estimated proportion of age group h in the sample, the variance of p_h was estimated using the normal approximation to the binomial (Scheaffer et al. 1979):

$$V(\hat{p}_h) = \hat{p}_h(1-\hat{p}_h)/(n_T-1), \quad [10]$$

where n_T is the total number of legible scales collected from the fishery. Mean length at age by sex and its variance were estimated using standard normal procedures.

RESULTS AND DISCUSSION

Creel Survey

An estimated 689 angler-hours of effort were expended by sport anglers fishing for chinook salmon on the Chignik River from 2 July through 9 August 1989 (Table 4). Most of the effort (95%) was expended in time periods B and C. Counts of anglers by date and time period are summarized in Appendix A1. The mean catch and harvest rates of chinook salmon were 0.323 and 0.263 fish per angler-hour, respectively (Table 5). Daily summary statistics of angler interviews are presented in Appendix A2. The estimated catch and harvest of chinook salmon were 222 and 181 fish, respectively (Table 6). Based on this, an estimated 41 chinook salmon were caught and released in this fishery. This level of harvest represents an estimated exploitation rate by sport anglers of 2% of the total return and 5% of the inriver escapement.

A summary of angler characteristic and demographic data collected in conjunction with the creel survey is presented in Table 7. These data indicate that a majority (79%) of sport anglers fishing the Chignik River were unguided adult residents of the state. Most anglers who fished the river used spinners. The bulk of the harvest comes from the river above the weir, and most anglers pass through the weir boat gate when they finish fishing.

Biological Data

Chinook salmon aged 1.4, 1.3, and 1.2 comprised 43.8%, 42.5% and 9.6% of the sport fishery harvest, respectively (Table 8). Males and females were nearly equally abundant (46.6% males, 53.4% females). In the numerically dominant 1.4 age class, males averaged 905 mm while females averaged 889 mm (Table 9). Mean lengths by sex of the other age groups are presented in Table 9.

Table 4. Estimated number of angler-hours of effort, by period, for the sport fishery for chinook salmon on the Chignik River, 1989.

	PERIOD			All Periods
	A	B	C	
Number of Counts	22	18	23	63
Estimated Effort	35	217	437	689
Standard Error	16	72	110	133
Relative Precision ^a				38%

^a $\alpha = 0.05$

Table 5. Estimated sport harvest rate (HPUE) and catch rate (CPUE) of chinook salmon in the Chignik River, 1989.

Number of Interviews	HARVEST		CATCH	
	HPUE	SE	CPUE	SE
315	0.2632	0.0216	0.3225	0.0368

Table 6. Estimated number of chinook salmon caught, harvested, and released in the Chignik River, 1989.

	Estimate	Standard Error	95% Confidence Interval	Relative Precision ^a
CATCH	222	50	107 - 255	41%
HARVEST	181	38	125 - 319	44%

^a $\alpha = 0.05$

Table 7. Summary of angler characteristics and demographic data collected from sport anglers fishing for chinook salmon in Chignik River, 1989.

Angler Demographics				Type of Lure	
Females	- 16%	Residents	- 79%	Bait	- 0%
Males	- 84%	Non-local	- 54%	Spinners	- 97%
Adults	- 95%	Unguided	- 100%	Flies	- 3%
Youth	- 5%				
Nonresidents	- 21%				

Table 8. Age composition of chinook salmon sampled from the Chignik River sport harvest, 1989.

Sex	Age Group					Total
	1.1	1.2	1.3	1.4	1.5	
Female						
Sample Size	1	0	33	44	0	78
Percent	0.7	0.0	22.6	30.1	0.0	53.4
Male						
Sample Size	2	14	29	20	3	68
Percent	1.4	9.6	19.9	13.7	2.1	46.6
Sexes Combined						
Sample Size	3	14	62	64	3	146
Percent	2.1	9.6	42.5	43.8	2.1	100.0
Standard Error	1.18	2.45	4.1	4.12	1.18	

Table 9. Mean length (mm) of chinook salmon in the Chignik River sport harvest, 1989.^a

Sex	Age Group ^b				
	1.1	1.2	1.3	1.4	1.5
Female					
Mean Length	560	---	866.5	889	---
Standard Error	---	---	8.87	10	---
Sample Size	1	0	33	44	0
Male					
Mean Length	386	626	858	905	937
Standard Error	15	21	17	24	30
Sample Size	2	14	29	20	3

^a Mid-eye to fork-of-tail length.

^b Of the 67 fish sampled, 9 (13.4%) had unreadable scales.

RECOMMENDATIONS

1. Given the magnitude of the sport harvest in relation to the total return and escapement of chinook salmon in the Chignik River during 1989, the current daily bag and possession limits appear appropriate to protect the long-term health of the chinook salmon population.
2. Careful monitoring of the chinook salmon return will be important to assure adequate escapement in years of weak or low returns. To ensure that escapement goals are achieved, the inriver sport harvest should be monitored at Chignik weir. Within the next 5 years, a complete creel survey should be conducted to examine any possible changes in the chinook salmon sport fishery.
3. The feasibility of reducing the incidental chinook salmon harvest in the commercial fishery should be investigated. This study should be conducted as soon as feasible to avoid possible over-exploitation of the chinook population during years of low chinook abundance coupled with high abundance of sockeye.

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APPENDIX A

Appendix A1. Counts of anglers fishing the Chignik
River for chinook salmon, 1989.

Date	Count by Period ^a		
	A	B	C
7/02			
7/03			
7/04			
7/05	0	1	1
7/06	0		2
7/07		0	6
7/08	0	2	
7/09	1	1	1
7/10	0	0	1
7/11			
7/12			
7/13	1	0	1
7/14	0	1	2
7/15			
7/16	0	5	7
7/17	0	5	8
7/18		2	4
7/19		0	2
7/20	1	1	
7/21	0		0
7/22			
7/23	0		
7/24	1	0	
7/25	0		2
7/26		0	0
7/27	0	1	1
7/28			
7/29			
7/30	0		1
7/31	0	1	0
8/01	0		0
8/02			0
8/03			
8/04	2	0	0
8/05	0	0	1
8/06	0	0	2
8/07	0		1
8/08	0	0	0

^a Period A: 0600-1159 hours, Period B: 1200-1659 hours,
and Period C: 1700-2300 hours.

Appendix A2. Daily summary statistics for sport anglers fishing the Chignik River for chinook salmon, 1989.

Date	Wd/We ^a	EFFORT (hrs)			HARVEST						CATCH					
		# Interviews	Mean	SE	Large Chinook			Small Chinook			Large Chinook			Small Chinook		
					Mean	SE	HPUE ^b	Mean	SE	HPUE	Mean	SE	CPUE ^c	Mean	SE	CPUE
7/02	We	12	1.5	0.35	0.33	0.188	0.216	0.00	0.000	0.000	0.33	0.188	0.216	0.00	0.000	0.000
7/04	We	5	2.5	0.67	0.80	0.490	0.320	0.00	0.000	0.000	1.20	0.735	0.480	0.00	0.000	0.000
7/05	Wd	8	2.9	0.67	0.88	0.295	0.298	0.00	0.000	0.000	0.88	0.295	0.298	0.13	0.125	0.043
7/06	Wd	12	1.5	0.22	0.58	0.229	0.394	0.00	0.000	0.000	0.58	0.229	0.394	0.00	0.000	0.000
7/07	Wd	25	1.9	0.16	0.64	0.172	0.343	0.04	0.040	0.021	0.64	0.172	0.343	0.08	0.055	0.043
7/08	We	13	2.2	0.11	0.31	0.133	0.138	0.15	0.104	0.069	0.31	0.133	0.138	0.15	0.104	0.069
7/09	We	15	1.5	0.12	0.47	0.165	0.318	0.00	0.000	0.000	0.47	0.165	0.318	0.00	0.000	0.000
7/10	Wd	6	2.3	0.56	0.00	0.000	0.000	0.00	0.000	0.000	0.00	0.000	0.000	0.00	0.000	0.000
7/11	Wd	2	1.0	0.00	0.50	0.500	0.500	0.00	0.000	0.000	1.00	0.000	1.000	0.00	0.000	0.000
7/12	Wd	7	1.6	0.14	0.43	0.297	0.261	0.00	0.000	0.000	0.43	0.297	0.261	0.00	0.000	0.000
7/13	Wd	7	2.9	0.58	0.86	0.340	0.300	0.00	0.000	0.000	1.43	0.429	0.500	0.00	0.000	0.000
7/14	Wd	11	1.6	0.58	0.36	0.244	0.222	0.18	0.122	0.111	0.36	0.244	0.222	0.18	0.122	0.111
7/15	We	12	4.3	0.15	1.00	0.275	0.231	0.08	0.083	0.019	1.00	0.275	0.231	0.08	0.083	0.019
7/16	We	37	3.6	0.23	0.78	0.129	0.215	0.00	0.000	0.000	0.78	0.129	0.215	0.03	0.027	0.007
7/17	Wd	14	3.5	0.49	0.64	0.225	0.182	0.00	0.000	0.000	0.64	0.225	0.182	0.00	0.000	0.000
7/18	Wd	13	3.5	0.75	0.46	0.183	0.130	0.08	0.077	0.022	0.46	0.183	0.130	0.08	0.077	0.022
7/19	Wd	6	1.8	0.11	0.83	0.401	0.476	0.00	0.000	0.000	0.83	0.401	0.476	0.00	0.000	0.000
7/20	Wd	11	1.7	0.18	1.00	0.270	0.587	0.18	0.122	0.107	1.09	0.251	0.640	0.36	0.152	0.213
7/21	Wd	12	4.4	0.43	0.83	0.297	0.190	0.17	0.112	0.038	0.92	0.336	0.210	0.25	0.131	0.057
7/24	Wd	2	1.4	0.38	0.50	0.500	0.364	0.00	0.000	0.000	0.50	0.500	0.364	0.00	0.000	0.000
7/25	Wd	2	2.8	2.25	0.00	0.000	0.000	0.50	0.500	0.182	1.50	1.500	0.545	0.50	0.500	0.182
7/26	Wd	6	1.3	0.54	0.83	0.401	0.619	0.00	0.000	0.000	1.00	0.365	0.743	0.17	0.167	0.124
7/27	Wd	10	1.3	0.28	0.80	0.291	0.615	0.00	0.000	0.000	1.00	0.298	0.769	0.00	0.000	0.000
7/28	Wd	2	4.5	0.00	1.50	0.500	0.333	0.00	0.000	0.000	4.00	0.000	0.889	0.00	0.000	0.000
7/29	We	3	0.9	0.06	1.33	0.667	1.413	0.33	0.333	0.353	2.33	0.667	2.473	0.33	0.333	0.353
7/30	We	7	1.6	0.32	0.00	0.000	0.000	0.14	0.143	0.087	0.29	0.184	0.174	0.14	0.143	0.087
7/31	Wd	4	2.0	0.58	0.25	0.250	0.125	0.25	0.250	0.125	1.50	0.645	0.750	0.25	0.250	0.125
8/01	Wd	7	0.7	0.20	0.29	0.184	0.387	0.00	0.000	0.000	0.29	0.184	0.387	0.00	0.000	0.000
8/03	Wd	4	1.4	0.81	0.00	0.000	0.000	0.00	0.000	0.000	1.00	1.000	0.727	0.00	0.000	0.000
8/04	Wd	5	2.3	0.47	0.80	0.374	0.356	0.00	0.000	0.000	0.80	0.374	0.356	0.00	0.000	0.000
8/05	We	3	1.5	0.00	0.00	0.000	0.000	0.00	0.000	0.000	0.00	0.000	0.000	0.00	0.000	0.000
8/06	We	8	1.9	0.34	0.00	0.000	0.000	0.00	0.000	0.000	0.00	0.000	0.000	0.00	0.000	0.000
8/07	Wd	3	2.0	0.00	0.00	0.000	0.000	0.33	0.333	0.167	0.00	0.000	0.000	0.33	0.333	0.167
8/09	Wd	10	1.9	0.08	0.10	0.100	0.054	0.00	0.000	0.000	0.10	0.100	0.054	0.00	0.000	0.000

^a Weekend = We; Weekday = Wd.

^b Number of chinook harvested per angler hour.

^c Number of chinook caught per angler hour. Includes fish harvested and released.

